

WHAT IS CLAIMED IS:

1. An area sensor comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an
electroluminescence element and a plurality of thin film transistors,
5 wherein the photodiode includes a photoelectric conversion layer that is in contact
with a part of a P-type semiconductor layer and an N-type semiconductor layer and is made of
an amorphous semiconductor film and
the photoelectric conversion layer is thicker than the P-type semiconductor layer and
the N-type semiconductor layer.

10 2. An area sensor comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an
electroluminescence element and a plurality of thin film transistors,
wherein a light emitted from the electroluminescence element is reflected from a
15 subject to be radiated to the photodiode,
the photodiode generates an image signal from the light radiated to the photodiode,
the photodiode includes a photoelectric conversion layer that is in contact with a part
of a P-type semiconductor layer and an N-type semiconductor layer and is made of an
amorphous semiconductor film and
20 the photoelectric conversion layer is thicker than the P-type semiconductor layer and
the N-type semiconductor layer.

3. An area sensor comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an

electroluminescence element and a plurality of thin film transistors,

wherein the plurality of thin film transistors control light emission of the electroluminescence element,

a light emitted from the electroluminescence element is reflected from a subject to be radiated to the photodiode,

the photodiode and the plurality of thin film transistors generate an image signal from the light radiated to the photodiode,

the photodiode includes a photoelectric conversion layer that is in contact with a part of a P-type semiconductor layer and an N-type semiconductor layer and is made of an amorphous semiconductor film and

the photoelectric conversion layer is thicker than the P-type semiconductor layer and the N-type semiconductor layer.

4. An area sensor comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an electroluminescence element and a plurality of thin film transistors,

wherein the pixel includes a photodiode, an electroluminescence element, a switching TFT, an electroluminescence driving TFT, a reset TFT, a buffer TFT and a selective TFT,

the switching TFT and the electroluminescence driving TFT control light emission of the electroluminescence element,

light emitted from the electroluminescence element is reflected from a subject to be radiated to the photodiode,

the photodiode and the plurality of thin film transistors generate an image signal

from the light radiated to the photodiode,

the photodiode includes a photoelectric conversion layer that is in contact with a part of a P-type semiconductor layer and an N-type semiconductor layer and is made of an amorphous semiconductor film and

5 the photoelectric conversion layer is thicker than the P-type semiconductor layer and the N-type semiconductor layer.

5. An area sensor according to claim 1, wherein the N-type semiconductor layer comprises polysilicon.

10 6. An area sensor according to claim 2, wherein the N-type semiconductor layer comprises polysilicon

15 7. An area sensor according to claim 3, wherein the N-type semiconductor layer comprises polysilicon

8. An area sensor according to claim 4, wherein the N-type semiconductor layer comprises polysilicon

20 9. An area sensor according to claim 1, wherein the P-type semiconductor layer comprises polysilicon.

10. An area sensor according to claim 2, wherein the P-type semiconductor layer comprises polysilicon

11. An area sensor according to claim 3, wherein the P-type semiconductor layer comprises polysilicon

5 12. An area sensor according to claim 4, wherein the P-type semiconductor layer comprises polysilicon

13. An area sensor according to claim 1, wherein the electric conversion layer comprises amorphous silicon.

10 14. An area sensor according to claim 2, wherein the electric conversion layer comprises amorphous silicon.

15 15. An area sensor according to claim 3, wherein the electric conversion layer comprises amorphous silicon.

16. An area sensor according to claim 4, wherein the electric conversion layer comprises amorphous silicon.

20 17. An area sensor according to claim 1, wherein the electroluminescence element has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

18. An area sensor according to claim 2, wherein the electroluminescence element

has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

19. An area sensor according to claim 3, wherein the electroluminescence element
5 has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

20. An area sensor according to claim 4, wherein the electroluminescence element
10 has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

21. An area sensor according to claim 1, wherein an electronic equipment using the
area sensor is an equipment, which is selected from the group of: a video camera, a digital
still camera, a notebook computer and a portable information terminal.

22. An area sensor according to claim 2, wherein an electronic equipment using the
area sensor is an equipment, which is selected from the group of: a video camera, a digital
still camera, a notebook computer and a portable information terminal.

20 23. An area sensor according to claim 3, wherein an electronic equipment using the
area sensor is an equipment, which is selected from the group of: a video camera, a digital
still camera, a notebook computer and a portable information terminal.

24. An area sensor according to claim 4, wherein an electronic equipment using the

area sensor is an equipment, which is selected from the group of: a video camera, a digital still camera, a notebook computer and a portable information terminal.

25. A display apparatus comprising a sensor portion, the sensor portion comprising:
5 a plurality of pixels, each of the plurality of pixels comprising a photodiode, an electroluminescence element and a plurality of thin film transistors,

wherein the photodiode includes a photoelectric conversion layer that is in contact with a part of a P-type semiconductor layer and an N-type semiconductor layer and is made of an amorphous semiconductor film and

10 the photoelectric conversion layer is thicker than the P-type semiconductor layer and the N-type semiconductor layer.

26. A display apparatus comprising a sensor portion, the sensor portion comprising:
15 a plurality of pixels, each of the plurality of pixels comprising a photodiode, an electroluminescence element and a plurality of thin film transistors,

wherein a light emitted from the electroluminescence element is reflected from a subject to be radiated to the photodiode,

the photodiode generates an image signal from the light radiated to the photodiode,

20 the photodiode includes a photoelectric conversion layer that is in contact with a part of a P-type semiconductor layer and an N-type semiconductor layer and is made of an amorphous semiconductor film and

the photoelectric conversion layer is thicker than the P-type semiconductor layer and the N-type semiconductor layer.

27. A display apparatus comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an
electroluminescence element and a plurality of thin film transistors,

wherein the plurality of thin film transistors control light emission of the
5 electroluminescence element,

a light emitted from the electroluminescence element is reflected from a subject to be
radiated to the photodiode,

the photodiode and the plurality of thin film transistors generate an image signal
from the light radiated to the photodiode,

10 the photodiode includes a photoelectric conversion layer that is in contact with a part
of a P-type semiconductor layer and an N-type semiconductor layer and is made of an
amorphous semiconductor film and

the photoelectric conversion layer is thicker than the P-type semiconductor layer and
the N-type semiconductor layer.

28. A display apparatus comprising a sensor portion, the sensor portion comprising:
a plurality of pixels, each of the plurality of pixels comprising a photodiode, an
electroluminescence element and a plurality of thin film transistors,

wherein the pixel includes a photodiode, an electroluminescence element, a
20 switching TFT, an electroluminescence driving TFT, a reset TFT, a buffer TFT and a
selective TFT,

the switching TFT and the electroluminescence driving TFT control light emission of
the electroluminescence element,

light emitted from the electroluminescence element is reflected from a subject to be

radiated to the photodiode,

the photodiode and the plurality of thin film transistors generate an image signal from the light radiated to the photodiode,

the photodiode includes a photoelectric conversion layer that is in contact with a part
5 of a P-type semiconductor layer and an N-type semiconductor layer and is made of an amorphous semiconductor film and

the photoelectric conversion layer is thicker than the P-type semiconductor layer and the N-type semiconductor layer.

10 29. A display apparatus according to claim 25, wherein the N-type semiconductor layer comprises polysilicon.

30. An area sensor according to claim 26, wherein the N-type semiconductor layer comprises polysilicon

15 31. An area sensor according to claim 27, wherein the N-type semiconductor layer comprises polysilicon

32. An area sensor according to claim 28, wherein the N-type semiconductor layer
20 comprises polysilicon

33. An area sensor according to claim 25, wherein the P-type semiconductor layer comprises polysilicon.

34. An area sensor according to claim 26, wherein the P-type semiconductor layer comprises polysilicon

35. An area sensor according to claim 27, wherein the P-type semiconductor layer
5 comprises polysilicon

36. An area sensor according to claim 28, wherein the P-type semiconductor layer comprises polysilicon

37. An area sensor according to claim 25, wherein the electric conversion layer
10 comprises amorphous silicon.

38. An area sensor according to claim 26, wherein the electric conversion layer
15 comprises amorphous silicon.

39. An area sensor according to claim 27, wherein the electric conversion layer comprises amorphous silicon.

40. An area sensor according to claim 28, wherein the electric conversion layer
20 comprises amorphous silicon.

41. An area sensor according to claim 25, wherein the electroluminescence element has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

42. An area sensor according to claim 26, wherein the electroluminescence element has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

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43. An area sensor according to claim 27, wherein the electroluminescence element has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

44. An area sensor according to claim 28, wherein the electroluminescence element has a positive electrode, a negative electrode and an electroluminescence layer provided between the positive electrode and the negative electrode.

45. An area sensor according to claim 25, wherein an electronic equipment using the area sensor is an equipment, which is selected from the group of: a video camera, a digital still camera, a notebook computer and a portable information terminal.

46. An area sensor according to claim 26, wherein an electronic equipment using the area sensor is an equipment, which is selected from the group of: a video camera, a digital still camera, a notebook computer and a portable information terminal.

47. An area sensor according to claim 27, wherein an electronic equipment using the area sensor is an equipment, which is selected from the group of: a video camera, a digital still camera, a notebook computer and a portable information terminal.

48. An area sensor according to claim 28, wherein an electronic equipment using the area sensor is an equipment, which is selected from the group of: a video camera, a digital still camera, a notebook computer and a portable information terminal.

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